Toolset Requirements

For the purposes of architecture integration and re-use, it is important that the metadata categories described in the DoDAF Meta-Model (DM2) be used as the basis for organizing the data underlying each DoDAF architectural description. However, *visualization* of that architecture data takes the form of a DoDAF-described Model or Fit-for-Purpose View chosen by the description developer to meet the decision maker's need. The developer (architect) must choose a toolset of some kind to construct the required Models and Views.

For IT solutions, prior to selecting one or more tool, the architecture team determines the broad systems engineering (SE) approach to be used in development of the description (e.g., an object-oriented and/or structured analysis approach). Then, toolsets which support the chosen technique(s) can be identified, tested/traded against one another as necessary, and adopted. Some general guidance applies to the tools selection process. If the purpose of the architecture effort is to design a system that depends largely upon the implementation of software, object-oriented techniques are called for and UML tools are likely the best choice. Alternatively, if the purpose of the effort at architecture description is to analyze business processes, structured analysis techniques – and the IDEF and BPMN tools that support it – should be employed.

The DoD CIO Enterprise Architecture and Standards Directorate is not yet aware of any automated tools that convert the outputs of one SE representational technique into the other (i.e., IDEF to UML or vice-versa), due to major differences in notation, visualization format, and database construction. Selection of the wrong toolset too often implies the need downstream for a major, expensive re-work of the architectural description effort – say, once a need is identified for another organization to re-use big parts of one's own description, and that other organization happens to have employed the "rejected" SE technique to build its own architectural description!

> **NOTE:** *DoDAF does not specify architecture toolsets, nor does it certify such toolsets as "compliant" with DoDAF 2.0 or the DoDAF Meta-model.*

Toolset selection should be guided by the level of experience of the team that is expected to develop the architectural description. Some critical mass of training in architecture (and often extensive mentoring) is required to ensure success, *regardless* of the SE method the team adopts. Moreover, an architecture team member well-versed in using IDEF or BPMN is not likely to succeed in UML without significant conversion training and the assignment of an experienced object-oriented leader(s) to the technical team. These limitations do not necessarily mean that the prospect for success in representing architectures is always dim, especially when sufficient time exists to achieve the required personnel training and

development. However, in quick-turn architecture efforts, the chance for success is often determined by the availability and degree of familiarity with existing methods, techniques, and toolsets.